

CLAIM LISTING:

The following listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 (Cancelled)

Claim 2 (Cancelled)

Claim 3 (Previously presented) The process of Claim 11, wherein the reactive components C) and D) are added simultaneously to the prepolymer.

Claim 4 (Previously presented) The process of Claim 11, wherein component C) is added to the prepolymer first, and then component D) is added.

Claim 5 (Previously presented) The process of Claim 11, wherein component D) is added to the prepolymer first, and then component C) is added.

Claim 6 (Cancelled)

Claim 7 (Cancelled)

Claim 8 (Previously presented) The process of Claim 11, wherein C) said low molecular weight polyol comprises ethylene glycol, butanediol, hexanediol, 1,4-di-(beta-hydroxyethyl)-hydroquinone, or 1,4-di-(betahydroxyethyl)bisphenol A.

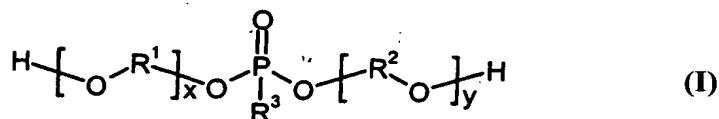
Claim 9 (Cancelled)

Claim 10 (Previously Presented) A thermoplastically processable polyurethane elastomer (TPU) having a tensile strength of > 35 MPa, with shrinkages of < 3% and with self-extinguishing properties which comprise the reaction product of:

- (1) a prepolymer containing NCO groups which comprises the reaction product of
 - A) at least one organic diisocyanate comprising a diphenylmethane diisocyanate, or a mixture of diphenylmethane diisocyanate and up to 15 mol% of polyphenyl polymethylene polyisocyanate,
 - and
 - B) at least one polyol having on average at least 1.8 and not more than 3.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 450 to 10,000;

with

- (2) an isocyanate-reactive component comprising:
 - C) at least one low molecular weight polyol or polyamine having on average at least 1.8 and not more than 3.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 60 to 400 as a chain lengthener;
 - and
 - D) from 1 to 15 wt.%, based on the total weight of the TPU, of at least one organic phosphorus-containing compound having on average about 2.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 60 to 10,000, wherein said organic phosphorus-containing compound is selected from the group consisting of (1) one or more phosphonates which correspond to the structural formula:



wherein:

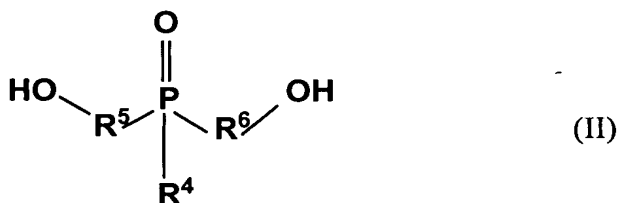
R¹ and R²: are the same or different, and each independently represents a branched or unbranched alkylene radical having 1 to 24 carbon atoms, a substituted or unsubstituted arylene radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkylene radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkarylene radical having 6 to 30 carbon atoms;

R³: represents a hydrogen atom, a branched or unbranched alkyl radical having 1 to 24 carbon atoms, a substituted or unsubstituted aryl radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkyl radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkaryl radical having 6 to 30 carbon atoms;

and

x and y each independently represents a number from 1 to 50;

and (2) one or more phosphine oxides which correspond to the structural formula:



wherein:

R⁴: represents a hydrogen atom, a branched or unbranched alkyl radical having 1 to 24 carbon atoms, a substituted or unsubstituted aryl radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkyl radical having 6 to 30 carbon

atoms, or a substituted or unsubstituted alkaryl radical having 6 to 30 carbon atoms;

and

R⁵ and R⁶: are the same or different, and each independently represents a branched or unbranched alkylene radical having 1 to 24 carbon atoms, a substituted or unsubstituted arylene radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkylene radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkarylene radical having 6 to 30 carbon atoms;

with the proviso that components C) and D) are different;

and, optionally, in the presence of:

- E) one or more catalysts;
- F) from 0 to 70 wt.%, based on the total weight of the TPU, of at least one further flameproofing agent which contains no Zerewitinoff-active hydrogen atoms and has a number-average molecular weight \overline{M}_n of 60 to 10,000;

and/or

- G) 0 to 20 wt.%, based on the total weight of the TPU, of further auxiliary substances and additives;

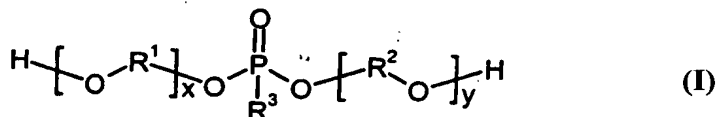
wherein the Isocyanate Index ranges from 85 to 120.

Claim 11 (Previously Presented) A process for the preparation of thermoplastically processable polyurethane elastomers (TPU) with tensile strengths of > 35 MPa, with shrinkages of < 3% and with self-extinguishing properties, comprising:

- (I) preparing a) a prepolymer containing NCO groups by reacting
 - A) at least one organic diisocyanate comprising a diphenylmethane diisocyanate, or a mixture of diphenylmethane diisocyanate and up to 15 mol% of polyphenyl polymethylene polyisocyanate,

with

- B) at least one polyol having on average at least 1.8 and not more than 3.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 450 to 10,000;
- (II) reacting a) said prepolymer with b) an isocyanate-reactive component comprising:
- C) at least one low molecular weight polyol or polyamine having on average at least 1.8 and not more than 3.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 60 to 400 as a chain lengthener;
- and
- D) from 1 to 15 wt.%, based on the total weight of the TPU, of at least one organic phosphorus-containing compound having on average about 2.0 Zerewitinoff-active hydrogen atoms and a number-average molecular weight \overline{M}_n of 60 to 10,000, wherein said organic phosphorus-containing compound is selected from the group consisting of (1) one or more phosphonates which correspond to the structural formula:



wherein:

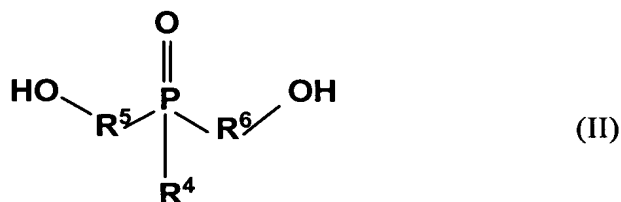
R^1 and R^2 : are the same or different, and each independently represents a branched or unbranched alkylene radical having 1 to 24 carbon atoms, a substituted or unsubstituted arylene radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkylene radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkarylene radical having 6 to 30 carbon atoms;

R^3 : represents a hydrogen atom, a branched or unbranched alkyl radical having 1 to 24 carbon atoms, a substituted or unsubstituted aryl radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkyl radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkaryl radical having 6 to 30 carbon atoms;

and

x and y each independently represents a number from 1 to 50;

and (2) one or more phosphine oxides which correspond to the structural formula:



wherein:

R^4 : represents a hydrogen atom, a branched or unbranched alkyl radical having 1 to 24 carbon atoms, a substituted or unsubstituted aryl radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkyl radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkaryl radical having 6 to 30 carbon atoms;

and

R⁵ and R⁶: are the same or different, and each independently represents a branched or unbranched alkylene radical having 1 to 24 carbon atoms, a substituted or unsubstituted arylene radical having 6 to 20 carbon atoms, a substituted or unsubstituted aralkylene radical having 6 to 30 carbon atoms, or a substituted or unsubstituted alkarylene radical having 6 to 30 carbon atoms;

with the proviso that components C) and D) are different;

with steps (I) and/or (II) optionally being carried out in the presence of

E) one or more catalysts,

and, optionally, with the addition of:

F) 0 to 70 wt.%, based on the total weight of the TPU, of at least one further flameproofing agent which contains no Zerewitinoff-active hydrogen atoms and has a number-average molecular weight \overline{M}_n of 60 to 10,000,

and/or

G) 0 to 20 wt.%, based on the total amount of TPU, of further auxiliary substances and additives,

wherein the Isocyanate Index ranges from 85 to 120.

Claim 12 (New) The thermoplastically processable polyurethane elastomer of Claim 10, wherein (1) said prepolymer comprises the reaction product of

A) at least one organic diisocyanate comprising a diphenylmethane diisocyanate, or a mixture of diphenylmethane diisocyanate and up to 15 mol% of polyphenyl polymethylene polyisocyanate,

and

B) at least one polyether polyol.

Claim 13 (New) The process of Claim 11, wherein (1) said prepolymer comprises the reaction product of

- A) at least one organic diisocyanate comprising a diphenylmethane diisocyanate, or a mixture of diphenylmethane diisocyanate and up to 15 mol% of polyphenyl polymethylene polyisocyanate,
- and
- B) at least one polyether polyol.